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## Suicidal ideation and lifetime attempts in substance and gambling disorders



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## ABSTRACT

Suicidality is more commonly reported among individuals with addictions relative to the general population, though data from Asian countries remain scarce. The medical records of 2187 Singaporean patients with drug ( $n=879$ ), alcohol ( $n=754$ ) or gambling ( $n=554$ ) disorders entering an outpatient treatment service were examined to explore differences in suicidal ideation and lifetime attempts between substance and gambling addictions. The relationship between suicidality, co-morbidity and addiction severity were also examined. 25.0% reported thoughts of suicide in the past month, 11.8% had a suicide plan and 12.2% reported lifetime attempts. Rates of suicidal ideation (thoughts, and plan) but not lifetime attempts were significantly higher among gambling than substance use patients. Co-morbid (DSM-IV axis-1) disorders were found among 32.5%, 38% and 40% of those reporting thoughts, plan and lifetime attempts respectively. Addiction severity was higher and quality of life lower among those reporting suicidal behaviors. Logistic regression revealed co-morbidity, debt, gender (being female) and being a gambling patient as significant predictors of suicidal behaviors. The findings highlight the importance of screening for suicidality, even in the absence of co-morbidity, particularly among gambling disorder patients with debts. Suicide risk should be assessed periodically and referral to suicidal prevention interventions routinely offered to this vulnerable population.

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### 1. Introduction

In 2010, suicide was identified as the tenth leading cause of death for all ages in the US (CDCP, 2010) and substance use disorders (SUDs) are among the most commonly associated mental health conditions (Wilcox et al., 2004). Suicide rates in Asia account for approximately 60% of the world's suicide rates (Chen et al., 2012; Beautrais, 2006). International research indicates that suicide attempts occur more frequently (up to 13.5 times) among individuals with SUDs relative to the general population (Wilcox et al., 2004). Among treated populations, rates of suicide attempts among heroin-dependent patients are 18% in Taiwan (Chen et al., 2010), 31% in Australia (Darke et al., 2007) and 49.5% among drug rehabilitation attendees in Japan (Okasaka et al., 2006). Among alcohol patients, rates of suicide attempts have been reported around 40% in the US (Roy, 2003) and Europe

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(Driessen et al., 1998). In contrast to substance users or abusers, comparatively little is known about suicide in individuals with behavioral addictions such as pathological gambling. However, according to Maccallum and Blaszczynski (2003) rates of suicidal ideation among pathological gamblers in Austria, Germany and the United States are 17–80%, and suicide attempts 4–23%. In the US, 32% of pathological gamblers in treatment reported suicidal ideation and 17% had made an attempt (Petry and Kiluk, 2002), with similar rates reported in a recent Singaporean study (Lee et al., 2011)

Discrepancies in the prevalence of suicidal behaviors among individuals with addiction problems can be attributed to differences in definitions, assessment methods and cultural differences. In Singapore, where the current study was conducted, attempting suicide is illegal, punishable with a one-year prison sentence or a fine, though rarely enforced. Although it has one of the lowest rates among Asian countries, occurring in 9.8 to 13 per 100,000 over the past five decades, which is equivalent to 350–400 each year (Chia et al., 2010), little is known about suicide among addicted individuals in this region. To address some of the knowledge gaps, we examined rates of suicide behaviors (ideation, plans

and attempts) among substance use disorder (SUD) and gambling disorder (GD) patients seeking outpatient treatment in Singapore, as well as the relationship between suicidality, co-morbidity and addiction severity.

**2. Method**

The study uses baseline data from a prospective treatment outcome monitoring program in operation between July 2009 and December 2011 when the program underwent further revisions. During this 2.5 year interval, 2616 outpatients presented to the National Addictions Management Service for substance or behavioral addiction problems. Of these, 2193 (83.8%) entered the Treatment Outcome Monitoring (TOM) program. The 423 excluded individuals were those who: declined participation (n=29), had communication/language difficulties (n=45), had a primary, severe psychiatric disorder or neurological issues (e.g. schizophrenia, epilepsy) meaning that they were co-managed by other departments (n=65), had no substance or behavioral addiction problem (n=78) or denied having an addiction problem (n=28). TOM participants with incomplete baseline interviews (n=178) were also excluded from the analyses. Of the 2193 patients, data on suicidal behaviors were missing for 6 patients leaving a final sample of 2187. The 2187 patients each had a diagnosis based on an interview/assessment with a psychiatrist using criteria from the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition TR (American Psychiatric Association, 2000), of either primary alcohol use disorder (n=754), drug use disorder (n=879), or gambling disorder (GD) (pathological gambling (n=521) or problem gambling (3–5 criteria; n=33). Rates of co-occurring addictions were as follows: 7 (0.32%) were diagnosed with all three disorders, 32 (1.5%) GD and Alcohol-use disorder (AUD), 24 (1.1%) GD and SUD, and 126 (5.8%) AUD and SUD.

As part of the intake assessment, patients were asked by a clinician “Have you had any suicidal thoughts in the past month?” (suicidal ideation) and, if yes, “Do you have a suicide plan?” and if yes “what method would you use”. All patients were also asked “Have you ever in your lifetime made a suicide attempt?”. Demographic and clinical data (e.g. substance use/gambling behavior, and psychiatric history) were also gathered as part of the intake assessment by certified addiction counsellors and psychiatrists on the patients’ first visit. TOM coordinators administered standardized measures of addiction severity; the Addiction Severity Index-Lite (ASI-Lite) (McLellan et al., 1997) for SUD patients and the Gambling Symptom Assessment Scale (G-SAS) (Kim et al., 2009) for GD patients, alongside the Personal Wellbeing Index (Cummins et al., 2003) as a quality of life measure and the Treatment Perceptions Questionnaire (Marsden et al., 2000) for treatment satisfaction. Ethical approval was granted by the clinical research committee 298/2010 and local ethical review board DSRB A/10/373, for the research team to undertake analyses on the de-identified database.

Statistical analyses were conducted using the PASW 18.0 statistical package. Descriptive statistics (proportions, means and standard deviations) were used to describe the data. Group differences were explored using Student’s t-test for continuous variables, and Chi-square for categorical variables. Logistic regression analyses were used to identify significant predictors of suicidal thoughts, plans and lifetime attempts. All P-values were two-sided and considered statistically significant at P < 0.05.

**3. Results**

**3.1. Clinical and demographic characteristics**

The sample (n=2187) was predominantly male (86.8%), averaged 42.1 (± 11.7) years old, and comprised 61.3% Chinese, 19.7% Indian, 15.6% Malay and 3.4% of other races. Just under half (47.0%) were married, 56.6% were employed and 68.7% educated to secondary level or above. Following psychiatric assessment, 22.8% was diagnosed with a co-morbid psychiatric disorder (DSM-IV diagnosis) (23.1% of SUD and 21.9% of GD patients). Among those with co-morbidities, the most common axis-1 disorders were depressive disorders (46.8%) adjustment disorder (18.7%), substance-induced psychosis (13.3%), substance-induced mood disorder (10.6%), anxiety disorder (10.4%), schizophrenia (5.2%) and bi-polar affective disorder (2.6%).

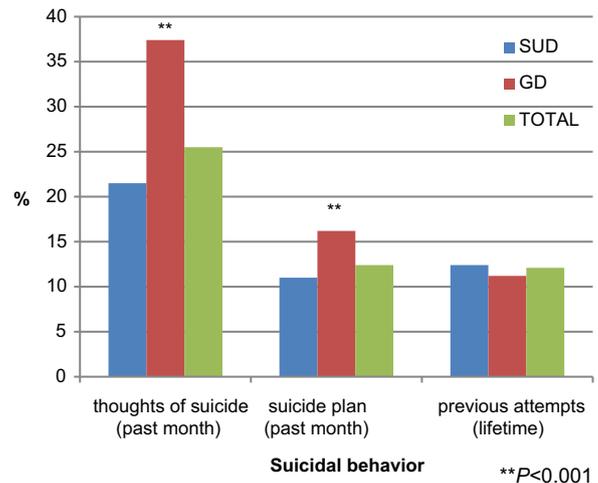
**3.2. Suicidal behaviors**

25.0% of the sample reported suicidal ideation, 11.8% had a method/plan and 12.2% had made a previous attempt (see Fig. 1).

Significantly more GD patients than SUD patients reported suicidal ideation (37.2% versus 20.9%,  $\chi^2(1)=58.6, P < 0.001$ ) and had a suicide plan/method (16.1% versus 10.4%;  $\chi^2(1)=12.9, P < 0.001$ ). Although rates of lifetime suicide attempts did not differ between GD and SUD patients (11.2% versus 12.6%,  $P = 0.38$ ), there was a borderline significant trend for SUD patients to have made more attempts (1.4 versus 1.2,  $t(144.10)=1.9, P = 0.06$ ). However, only 35.2% of those with suicidal ideation, 37.7% of those with a suicide method/plan and 40.1% of those with lifetime suicide attempts had a co-morbid psychiatric disorder. Among those reporting lifetime attempts (n=267), the methods used in the most recent attempt were jumping from a height (28.5%), overdose (25.8%) and exsanguination (16.5%). More common among female than male patients were suicidal thoughts (31.6% versus 24.0%,  $P < 0.01$ ), having a method/plan (15.6% versus 11.2%,  $P < 0.05$ ) and previous attempts (20.2% versus 11.0%,  $P < 0.001$ ). Females were also more likely to have a co-morbid axis-1 disorder (35.4% versus 20.9%,  $P < 0.001$ ).

**3.3. Predictors of suicidal behaviors**

Logistic regression analyses revealed multiple significant predictors of suicidal behavior (see Tables 1, 2 and 3). The first model indicated that co-morbid patients were 2.3 times as likely, patients with debt almost twice (OR=1.9) as likely and GD patients more likely (OR=1.6) to have reported suicidal thoughts in the past month and the risk increased by 1% for every additional year of age. In the second model, co-morbid patients were 2.3 times as likely and patients with debt were more likely (OR=1.6) to have



**Fig. 1.** Differences in suicidal behaviors between SUD and GD patients.

**Table 1**  
Predictors of past month suicide thoughts.

	Suicidal thoughts (past month)			
	Sig.	Exp(B)	95%CI	
Gender (female)	0.11	1.27	0.95	1.71
Age at intake	0.03	1.01	1.00	1.02
Comorbidity (yes)	0.00	2.33	1.85	2.94
Any debt (yes)	0.00	1.89	1.44	2.47
Employed (yes)	0.11	0.83	0.66	1.04
GD (not SUD)	0.00	1.56	1.15	2.11
Married (yes)	0.97	1.00	0.80	1.24
Chinese (non Chinese)	0.21	1.16	0.92	1.48
Educated (secondary + above)	0.74	0.96	0.76	1.22

Model  $\chi^2 = 142.9$  (d.f.=9)  $P < 0.001$ ,  $R^2 = 0.099$ .

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